What is Claimed is:

1. A process for the production of NF_3 comprising:

a) reacting fluorine gas at an initial concentration and liquid ammonium acid fluoride in a first reaction zone in a relatively low energy environment to produce a first reaction product including NF_3 and at least some unreacted fluorine gas; and

b) reacting the first reaction product including the unreacted fluorine gas in a second reaction zone in a relatively high energy environment to produce a second reaction product, wherein the low energy environment in the first reaction zone and the high energy environment in the second reaction zone substantially convert the fluorine gas to NF_3 in a manner which at least substantially reduces corrosion in the first and second reaction zones due to the corrosive properties of the fluorine gas.

2. The process of claim 1 wherein the first reaction zone has a first power input and a first aspect ratio and the second reaction zone has a second power input higher than the first power input and a second aspect ratio lower than the first aspect ratio.

3. The process of claim 1 further comprising separating the NF_3 from the second reaction product.

4. The process of claim 2 wherein the first aspect ratio is from about 5 to 150.

5. The process of claim 4 wherein the first aspect ratio is from about 10 to 100.

6. The process of claim 2 wherein the first power input in the reaction zone is less than about 1,000 watts/per cubic meter of $NH_4F(HF)_x$.

7. The process of claim 6 wherein the first power input in the first reaction zone is less than about 500 watts per cubic meter of $NH_4F(HF)_x$.

8. The process of claim 2 wherein the second aspect ratio is up to about 5.

9. The process of claim 8 wherein the second aspect ratio is about 1.

10. The process of claim 2 wherein the second power input in the second reaction zone is at least 5,000 watts per cubic meter of $NH_4F(HF)_x$.

11. The process of claim 1 wherein the reaction of fluorine gas in the first reaction zone converts at least 35% of the fluorine gas to the first reaction product.

12. The process of claim 11 wherein the reaction of fluorine gas in the first reaction zone converts at least 45% of the fluorine gas to the first reaction product.

13. The process of claim 12 wherein the reaction of fluorine gas in the first reaction zone converts at least 65% of the fluorine gas to the first reaction product.

14. The process of claim 1 wherein the first power input in the first reaction zone is in part obtained from the introduction of the fluorine gas to the first reaction zone.

15. The process of claim 1 comprising conducting the reaction in the first and second reaction zones at a temperature of from about 110 to 150°C.

16. The process of claim 15 comprising conducting the reaction in the first and second reaction zones at a temperature of from about 120 to 140°C.

17. The process of claim 1 wherein the liquid $NH_4F(HF)_x$ melt acidity x value is from about 1.2-2.2.

18. The process of claim 17 wherein the melt acidity x value is from about 1.4-2.0.

19. The process of claim 18 wherein the melt acidity x value is from about 1.6-1.8.

20. The process of claim 1 wherein the first reaction product contains an impurity gas comprising N_2F_4, said process further comprising reacting the impurity gas with fluorine gas at an elevated temperature to convert at least some of the impurity gas to NF_3.

21. The process of claim 20 wherein the impurity gas comprises N_2F_4 and N_2F_2.

22. The process of claim 20 comprising reacting the impurity gas with fluorine gas at a temperature of 200 to 400°C.

23. The process of claim 1 wherein the first reaction zone includes a static mixing element.

24. The process of claim 1 wherein the second reaction zone includes a dynamic mixing assembly.

25. Apparatus for the production of NF_3 comprising:

a) a first reaction zone for reacting fluorine gas at an initial concentration and liquid ammonium acid fluoride;

b) means for providing a low energy environment to the first reaction zone to produce a first reaction product including NF_3 and at least some unreacted fluorine gas;

c) a second reaction zone for receiving the first reaction product and for reacting the unreacted fluorine gas therein; and

d) means for providing a high energy environment to the second reaction zone to convert the fluorine gas to NF_3 in a manner which substantially reduces corrosion in the first and second reaction zones due to the corrosive properties of the fluorine gas.